NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CHANNEL BANK VEGETATION

(Ac.)
CODE 322

DEFINITION

Establishing and maintaining vegetative cover on channel banks, berms, spoil, and associated areas.

PURPOSE

- Stabilize channel banks and adjacent areas and reduce erosion and sedimentation using vegetation.
- Maintain or enhance the quality of the environment, including visual aspects and fish and wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to establishing vegetation on channel banks, berms, spoil, and associated areas. This practice does not apply to grassed waterways, diversions, areas with protective linings, areas covered with water for an extended period of time, or areas where conditions will not support adequate vegetation.

CRITERIA

The site shall be evaluated for potential to achieve planning objectives through a change in management.

General Criteria Applicable to All Purposes

Conservation Practice Standard, Streambank and Shoreline Protection, 580 shall be used when stabilization of the Toe and/or Bank Hydrologic Zones is required before channel vegetation establishment.

Areas to be planted will be cleared of unwanted materials and smoothed or shaped, if needed, to meet planting and landscaping purposes.

Channel side slopes shall be shaped so that they are stable and allow establishment and maintenance of desired vegetation

When slopes are modified for seeding, topsoil will be stockpiled and spread over areas to be planted as needed to meet planting and landscaping needs.

Streambanks to be used for public access (fishing, swimming and related activities) will have side slopes no steeper than a ratio of 4 horizontal to 1 vertical (4:1).

Bank Stabilization Techniques. A combination of vegetative and structural measures will be used on bank slopes steeper than 3:1 to insure that they are stable.

Species Selection. Plant material used for this practice shall:

- Typically occur in the hydrologic zone into which they will be planted. See Figure 1 for hydrologic zone locations and descriptions.
- Be adapted, tested and proven cultivars in the regions in which they will be used.
- Produce plant communities that are compatible with those in the area when mature.
- Be resistant to diseases or insects common to the site or location.
- Protect the channel banks and help maintain channel capacity.

All commercial seed and planting materials shall be labeled and meet state seed quality law standards and use of certified seed will be encouraged.

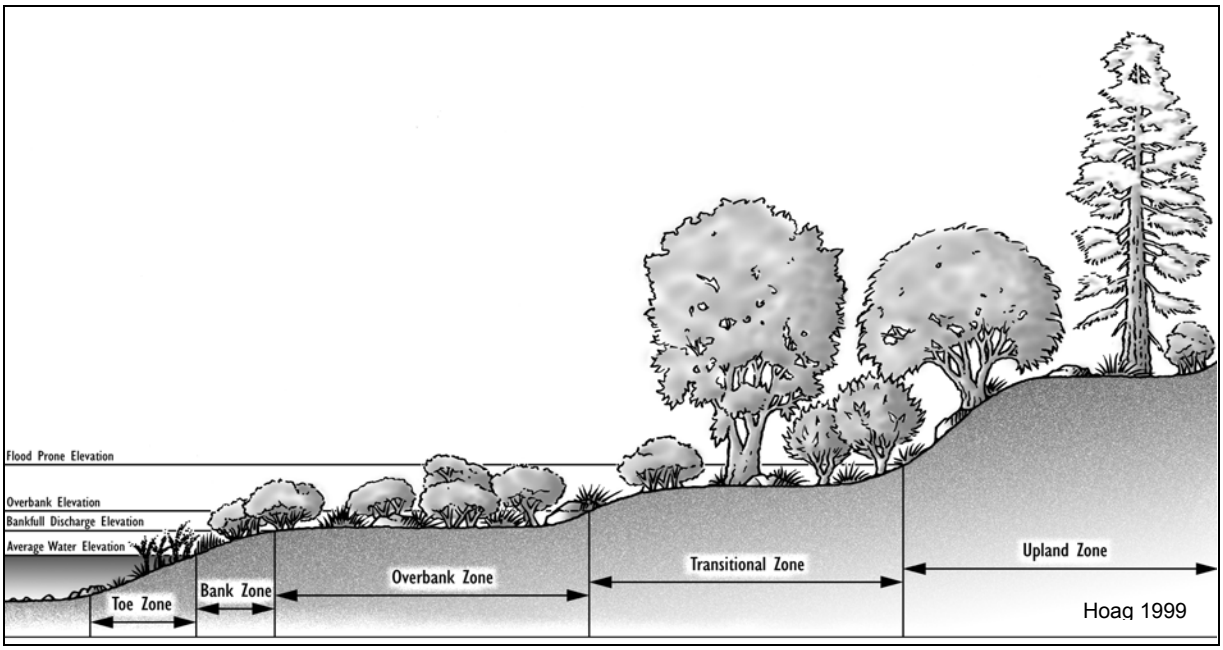

Figure 1. Location of Hydrologic Zones Along a Channel

Definitions and descriptions of hydrologic zones used for Channel Bank Vegetation:

Bankfull Discharge Elevation - In natural streams, it is the elevation at which water fills the channel without overflowing onto the flood plain.

Bank Zone - The area above the Toe Zone located between the average water level and the bankfull discharge elevation. Vegetation may be herbaceous or woody, and is characterized by flexible stems and rhizomatous root systems.

Overbank Zone - The area located above the bankfull discharge elevation continuing upslope to an elevation equal to two thirds of the flood prone depth. Vegetation is generally small to medium shrub species.

Toe Zone - The portion of the bank that is between the average water level and the bottom of the channel, at the toe of the bank. Vegetation is generally herbaceous emergent aquatic species, tolerant of long periods of inundation.

Transitional Zone - The area located between the overbank zone, and the flood prone width elevation. Vegetation is usually larger shrub and tree species.

Upland Zone – The area above the Transitional Zone; this area is seldom if ever saturated.

Note: some channels have fewer than four hydrologic zones because of differences in soils, topography, entrenchment and/or moisture regime.

Establishment of Vegetation. The species used, planting rates, spacing, and methods and dates of planting shall be based on plant materials program trials or other technical guidance, such as local planting guides or technical notes. Planting rates will be 150% of the rates listed in Idaho NRCS Plant Materials Technical Note 24.

Refer to Idaho, NRCS Plant Materials Technical Notes 23, 24, and 32, and Engineering Field Handbook Chapter 16, Streambank and Shoreline Protection and Chapter 18, Soil Bioengineering for Upland Slope Protection and Erosion Protection.

Identify, mark, and protect desirable existing vegetation during practice installation.

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Bioengineering practices (techniques include fascines, brush layering, dormant pole planting, brush mattresses, and vertical bundles are to be used when velocities, soils, and stability will not allow establishment of vegetation alone. Extreme conditions may require practices such as barbs, riprap, etc. to aid in establishing channel bank vegetation.

The existing vegetation will be cleared in a three-foot diameter around each site where container, balled, potted, plug, paper sleeve and bare root stock plantings are planted.

A suitable seedbed shall be prepared for all seeded species. Compacted layers will be ripped and the soil re-firmed prior to seedbed preparation. Seeds will be planted using the method or methods best suited to site and soil conditions.

Herbaceous plantings will be limited to slopes of 3:1 or flatter. Slopes steeper than 3:1 will have combinations of woody vegetation or structural controls before herbaceous vegetation can be used.

Woody vegetation and woody species planted as conetainers, balled, potted, plugs, paper sleeves or bare root stock will only be planted on stable banks on slopes of 2:1 or flatter. On slopes of 2:1 to 3:1 plant materials should be planted on modified microsites such as scalped areas or small terraces. Do not plant below normal high water line.

Dormant unrooted cuttings will be used on steep side slopes and in unstable areas where banks are stabilized by structures. These cuttings may be used below the normal high water line.

Sod placement shall be limited to areas that can naturally supply needed moisture or sites that can be irrigated during the establishment year. Sod will be placed and anchored using techniques to insure that it remains in place during the establishment period.

Fertilization. All fertilizers and soil amendments will be applied in accordance with soil analysis and plant requirements, following the criteria in the Conservation Practice Standard, Nutrient Management, 590. Separate soil tests will be made on the cut and fill areas where grasses and forbs are to be established. Care must be exercised to prevent applied nutrients from entering the water column.

Site Protection and Access Control. Grazing animal access to planted areas will be controlled for a minimum of two growing seasons during the establishment period.

All areas to be grazed will have a grazing plan that meets the criteria in the Conservation Practice Standard, Prescribed Grazing, 528.

Grazing shall be permanently excluded on high hazard sites, such as cut banks, areas of seepage or other potentially unstable areas.

Tree guards will be placed around landscaped areas as needed to protect against animal damage.

Beaver and other rodents will be controlled as needed to protect establishment and growth of vegetation. Controls will meet requirements of the Idaho Fish and Game regulations.

Mulching. All disturbed areas will be mulched as necessary. Mulch will be applied and anchored according to the criteria in Conservation Practice Standard, Mulching, 484.

Straw is the preferred mulch but needs to be anchored in place with equipment such as rollers and crimpers. Tackifiers, woven netting, and other covers can be used to anchor mulch when slopes are too steep to use equipment on the site. Wheat straw deteriorates less rapidly and results in less volunteer growth compared to barley straw. Use clean straw to minimize spread of noxious weeds. Woven, fabric, and artificial mulches can also be used.

Hydro planting and mulching may be used on steep, inaccessible sites not suitable for straw mulch planting. Use of hydro planting and mulching equipment is limited by its effective range. Do not use when high winds or animal or foot traffic are expected to interfere. A split hydro mulch, hydro planting operation is recommended on sites suitable to hydro mulch planting. Seed and fertilizer should be applied first to provide better seed to soil contact and then hydro mulched over the site.

CONSIDERATIONS

Stable, overhanging banks that provide shade and cover for fish should not be disturbed.

Channel stabilization and streambank protection practices can facilitate establishment of channel vegetation.

A riparian functional assessment should be completed on live streams to determine channel condition.

In constructed channels, consider the size of vegetation at maturity so as not to restrict the capacity of the channel or conflict with surrounding uses. Vegetative practices should be designed to provide effective stability and cover. Stability will allow for indigenous vegetation to volunteer on the site.

Filter strips, riparian forest buffers and conservation cover applied in conjunction with channel vegetation will improve water quality and enhance wildlife habitat.

Providing plant species diversity will help combat disease and the overuse of a single species.

Where economically feasible and practical, irrigation of new plantings should be considered.

Protection of channel vegetation from upland sediment deposits resulting from wind and water erosion should be considered.

Provisions for safety and protection of human life and property should be considered in all aspects of design, application, and maintenance.

Consider economic and resource costs of practice failure or re-establishment.

Consider effects of vegetation on water budget components, especially on volumes and peak flows of runoff.

Techniques to minimize sedimentation impacts from practice installation, such as sediment barriers, erosion control fabric, and biodegradable mulches, should be considered.

Effects of woody vegetation on stream temperatures and invertebrate populations should be considered.

PLANS AND SPECIFICATIONS

Plans and designs are to be prepared for specific field sites. The plan will identify site conditions, required permits, and include design drawings showing location of planned measures, cut and fill cross sections, requirements for site preparation, location of planned species, planting dates, planting methods, plant spacing, planting depth, mulching, fertilizer and irrigation requirements. See Idaho NRCS Plant Materials Technical Note 23. A management strategy protecting the site will be in place prior to the installation of Channel Bank Vegetation improvements.

Specifications will be completed for each hydrologic zone located within the channel.

OPERATION AND MAINTENANCE

Maintenance for this practice includes the following:

- Management of vegetative growth, as applicable, by mowing, prescribed grazing, applying approved pesticides and fertilizer, or other means to maintain the desired cover. Vegetative removal will be restricted to periods having the least impacts on nesting wildlife, streambanks, water quality, and woody vegetation. All species shall be allowed adequate time for re-growth in order to provide winter cover.
- Repair of appurtenances and fences will be completed as needed.

REFERENCES

Bentrup, G., and J.C. Hoag. 1998. The Practical Streambank Bioengineering Guide - User's Guide for Natural Streambank Stabilization Techniques in the Arid and Semi-arid Great Basin and Intermountain West. Interagency Riparian/Wetland Plant Development Project. USDA-NRCS, Aberdeen, ID.

NEH 653, Stream Corridor Restoration: Principles, Processes, and Practices.

Hoag, J.C. 1999. Riparian Planting Zones. View from a Wetland, No. 5. (1998-1999) Interagency Riparian/Wetland Project, Plant Materials Center, USDA-NRCS, Aberdeen, ID.